

ABSTRACT

Medical devices are manufactured from fine grained materials, processed from of a variety of metals and alloys, such as stainless steel, cobalt-chromium and nickel-titanium alloys. A fine grained metal or alloy is formed from a specimen rapidly heated to its recrystallization temperature, and then subjected to high temperature, multi-axial deformation, for example, by heavy cross-forging or swaging. The deformed specimen may be cooled and reheated to a second recrystallization temperature. The metal or alloy in the specimen is then allowed to recrystallize, such that the grain size is controlled by quenching the specimen to room temperature. A desired medical device is then configured from the fine grained material. Decreasing the average grain size of a substrate material and increasing the number of grains across a thickness of a strut or similar component of the medical device increases the strength of the device and imparts other beneficial properties into the device.